Science Toolkit: Grade 7 Objective 3.B.1.d

Student Handout: Science: Grade 7 Objective 3.B.1.d

Standard 3.0 Life Science

Topic B. Cells

Indicator 1. Gather and organize data to defend or argue the proposition that all living things are cellular (composed of cells) and that cells carry out the basic life functions.

Objective d. Collect data from investigations using single celled organisms, such as yeast or algae to explain that a single cell carries out all the basic life functions of a multicellular organism.

Reproducing

Extracting energy from food

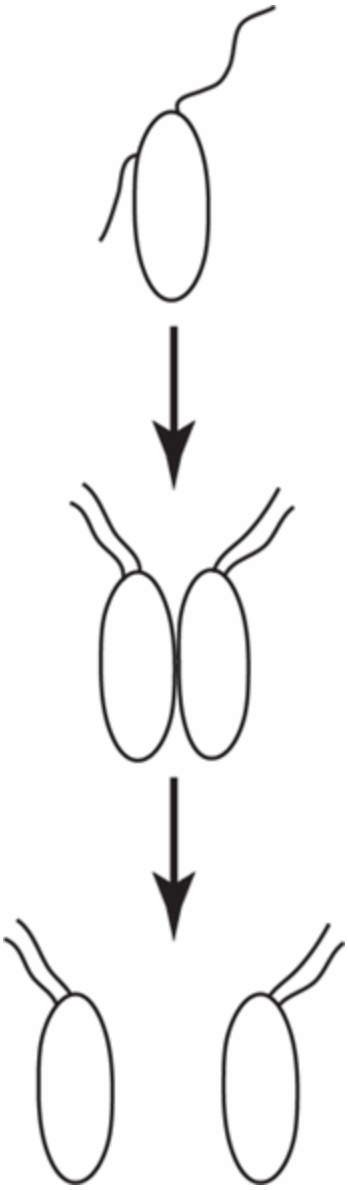
Getting rid of wastes

Selected Response (SR) Item

Question

Use the technical passage 'Green Ocean Machine' to answer the following.

The picture shows a Hatena cell dividing.



What life function does the picture of the Hatena depict?

A. waste removal
B. energy extraction
C. sexual reproduction
D. asexual reproduction

Correct Answer

D. asexual reproduction

Question

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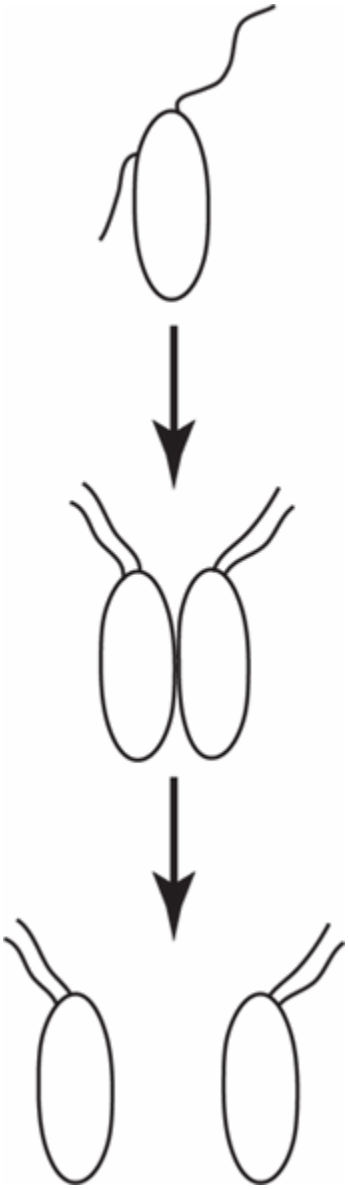

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Handouts

Green Ocean Machine

The plants in the window, the trees outside and the broccoli in the refrigerator all have ancient ancestors that didn't used to be green. They only “got green” when they captured smaller green creatures that turn sunlight into food. These small green creatures eventually became the green “chloroplasts” that the plants use to capture energy from the sun through the process of photosynthesis.

In Japan, scientists have now discovered a tiny ocean creature that may be in a similar process of “getting green.” This process could eventually provide the tiny sea creatures with their own chloroplasts, or something similar.

These organisms are called “Hatena” which means “mysterious” in Japanese. Sometimes they are green and sometimes they don't have much of a color at all.

The creatures turn green after they swallow up an even smaller, green sea creature called an “alga.” These single-celled creatures stay green until it's time to divide in two. At dividing time, one of the two new cells is green. The other new cell is colorless, though you might say it is “green with envy” because it develops an arm that captures its own green creature. Once Hatena has a green sunlightcapturing alga inside its body, its arm disappears. The new green partner seems to provide Hatena with most of its energy needs.

If the scientists are right, then Hatena and the green critter are in the process of becoming one organism instead of two separate organisms. If this happens, the green creature will become an important sun-capturing part of every Hatena—similar to the green “chloroplasts” found in the plants in the window, the trees outside and the broccoli in the refrigerator.
